

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 10028-PT-DE	FOR FURTHER ACTION		See item 4 below
International application No. PCT/EP2004/010783	International filing date (day/month/year) 24 September 2004 (24.09.2004)	Priority date (day/month/year) 26 September 2003 (26.09.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant RHEINISCH-WESTFÄLISCH-TECHNISCHE HOCHSCHULE			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report   |
| <input type="checkbox"/> Box No. II           | Priority  |
| <input type="checkbox"/> Box No. III          | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV           | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI           | Certain documents cited   |
| <input type="checkbox"/> Box No. VII          | Certain defects in the international application  |
| <input type="checkbox"/> Box No. VIII         | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 12 June 2006 (12.06.2006)
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Form PCT/IB/373 (January 2004)

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# PATENT COOPERATION TREATY

**Translation**

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year) **See form PCT/ISA/210**

Applicant's or agent's file reference  
**10028-PT-DE**

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
**PCT/EP2004/010783**

International filing date (day/month/year)  
**24.09.2004**

Priority date (day/month/year)  
**26.09.2003**

International Patent Classification (IPC) or both national classification and IPC  
**G01R31/36**

Applicant  
**RHEINISCH-WESTFÄLISCH-TECHNISCHE HOCHSCHULE**

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA/IEP

Authorized officer

Facsimile No.

Telephone No.

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INTERNATIONAL SEARCHING AUTHORITY

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Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-13, 25-27	YES
	Claims	14-24, 28	NO
Inventive step (IS)	Claims		YES
	Claims	1-28	NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations:

1. Reference is made to the following documents:

D1: WO 02/27342 A2 (HYDROGENICS CORPORATION) 4  
April 2002

D2: US 2002/196025 A1 (FREEMAN NORMAN A ET AL) 26  
December 2002

2. The present application does not meet the requirements of PCT Article 33(1), because the subject matter of claim 14 is not novel within the meaning of PCT Article 33(2).

2.1 D1 discloses (the references in parentheses relate to this document):

A device for determining the charge of a battery (see figure 1), characterised in that

- it has means for determining a gain crossover frequency for an impedance of the battery excited by an alternating current signal (figure 1, 20, 30, 50, 70, 100-130) and
- a computer unit for assigning the gain crossover frequency to the charge of the

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

battery (figure 1, 20),

- whereby the gain crossover frequency is a frequency of the alternating current signal at which an imaginary portion of the impedance of the battery vanishes (page 9, lines 10 to 15).

3. The present application does not meet the requirements of PCT Article 33(1), because the subject matter of claim 1 does not involve an inventive step within the meaning of PCT Article 33(3).

3.1 D1 is considered to be the closest prior art in relation to the subject matter of claim 1. It discloses (the references in parentheses relate to this document):

A method for determining the condition of a cell (abstract), characterised in that

- a gain crossover frequency for an impedance of the cell excited by an alternating current signal (figure 1, 50) is determined (figure 2, 154) and
- the gain crossover frequency is assigned to the condition of the cell (page 10, lines 2 to 6),
- whereby the gain crossover frequency is a frequency of the alternating current signal at which an imaginary portion of the impedance of the cell vanishes (page 9, lines 10 to 15).

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
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The novelty of the claim is established in that the method is used for determining the charge of a battery. However, this is an equivalent use of the method as familiar to a person skilled in the art (see D1: page 2, lines 13 to 15 and also e.g. D2, paragraph [0066]).

3.2 The subject matter of claim 1 therefore differs from the known method in that the condition of a cell that is determined is the charge of a battery.

3.3 The problem to be solved by the present invention can therefore be considered to be that of finding further fields of use for the method.

3.4 The solution proposed in claim 1 of the present application cannot be considered inventive (PCT Article 33(3)), because it is known to persons skilled in the art that impedance methods are particularly well suited to determining the charge of a battery (see D1: page 2, lines 13 to 15 and also e.g. D2, paragraph [0066]).

4. The application does not meet the requirements of PCT Article 6 because claims 6, 7, 18, 19, 20, 21 and 22 are not clear. They each contain references to features that are not contained in all the claims to which they refer back (e.g. to "the phase difference" in claim 6).

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

5. Dependent claims 2 to 13 and 15 to 28 do not contain any features which, in combination with the features of any claim to which they refer back, meet the PCT requirements for novelty (PCT Article 33(2)) and inventive step (PCT Article 33(3)). The reasons are as follows:
- 5.1 The additional features of the following claims are disclosed in D1 (the references in parentheses relate to this document) (PCT Article 33(3)):
- claim 2 (figure 1, 50)
  - claim 3 (figure 1, 120)
  - claim 4 (figure 1, 130)
  - claim 5 (page 9, lines 5 to 8)
  - claim 6 (see figure 2)
  - claim 7 (figure 2)
  - claim 8 (figure 2, 154)
  - claim 9 (figure 1, 50 and page 9, lines 25 to 27)
  - claim 10 (page 10, lines 15 to 18)
  - claim 11 (claim 16)
- 5.2 The additional features of the following claims are disclosed in D1 (the references in parentheses relate to this document) (PCT Article 33(2)):
- claim 15 (figure 1, 50)
  - claim 16 (figure 1, 120)
  - claim 17 (figure 1, 130)
  - claim 18 (figure 1, 70, oscilloscopes usually contain frequency filters)

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citations and explanations supporting such statement

- claim 19 (page 9, lines 5 to 8)
- claim 20 (figure 1, 20 and 30; page 6, lines 3 to 5 and page 7, lines 3 to 4)
- claim 21 (figure 1, 70, digital oscilloscopes usually carry out Fourier transforms)
- claim 22 (figure 1, 20 and 30; figure 2)
- claim 23 (page 10, lines 15 to 18)
- claim 24 (claim 16)
- claim 28 (page 6, lines 6 to 7)

5.3 The features of dependent claims 12, 13, 25, 26 and 27 are conventional measures for determining the charge of a battery. It is therefore obvious to a person skilled in the art to apply these features with corresponding effect in a method or a device according to D1, and in this way to arrive at a method or a device according to claims 12, 13, 25, 26 and 27 without thereby being inventive (PCT Article 33(3)).



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